

USSR/Diseases of Farm Animals. Diseases Caused by  
Bacteria and Fungi.

R-1

Abs Jour : Ref Zhur-Biol., No 18, 1958, 83515

Author : Gromov, V. P., Zhukova, Ye. N., Vetluzhskikh, P. A.

Inst : Sverdlovsk Institute of Agriculture  
Title : The Effectiveness of Vaccine Therapy in Bovine  
Brucellosis.

Orig Pub : Tr. Sverdlovsk. s.-kh. in-ta, 1957, 1, 321-326

Abstract : Formal vaccines and heat-killed vaccines were prepared from virulent strains of all three brucella types to be used in vaccine therapy. Mice and rabbits infected by brucella cultures were subjected to formal vaccine treatment. Bacteriological examinations of perished and killed mice and rabbits did not reveal brucella discharges. Apart from this, a sharply increased agglutination titer was detected in rabbits. Brucellosis afflicted cows were treated with intramuscular injections of formal vaccine.

Card 1/3

ZHUKOVA, Ye. N., Cand Vet Sci -- (diss) "Materials on the characteristics of paratyphoid cultures raised in the Central Urals." Kazan', 1960. 27 pp; (Kazan' Inst im N. E. Bauman of the Ministry of Agriculture USSR); 180 copies; price not given; (KL, 22-60, 142)

"APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0

IOFFE, I.S.; ZHUKOVA, Ye.N.

Rhodamine sulfochloride. Zhur. ob. khim. 34 no.10:3510 O '64.  
(MIRA 17:11)

APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0"

IOFFE, I.S.; SUKHINA, A.F.; ZHUKOVA, Ye.M...

Rhodamine dyes and related compounds. Part 8: Amides of sulfo-  
rhodamine B containing N- $\beta$ -hydroxy and  $\beta$ -chloroethyl groups.  
Zhur. ob. khim. 33 no.12:3943-3946 D '63. (MIRA 17:3)

IOFFE, I.S.; SUKHINA, A.F.; ZHUKOVA, Ye.N.

Rhodamine dyes and related compounds. Part 6: Chloride and  
amides of sulforhodamine B. Zhur. ob. khim. 32 no. 5; 1489-1492  
Mv '62. (Rhodamine)

KLIMOV, A.N.; ZHUKOVA, Ye.N.

Simple chemical method for the determination of penicillin in urine.  
Lab. delo 6 no.4:25-27 Jl-Ag '60. (MIRA 13:12)

1. Kafedra biologicheskoy khimii Vseyenne-meditinskoy ordena Lenina  
akademii imeni S.M.Kirova.  
(PENICILLIN) (URINE-ANALYSIS AND PATHOLOGY)

SEMENOVA, Ye.I.; ZHUKOVA, Ye.V.; AFANAS'YEVA, V.M.

Familial mucoviscidosis in a 3-month-old infant with Hr-incompatibility. Pediatrichia 38 no.10:70-75 O '60. (MIRA 13:11)

1. Iz kafedry detskikh bolezney lechebного fakul'teta (zav. -- prof. M.M. Bubnova) II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova (dir. - dotsent M.G. Sjurotchina) i patologoanatomicheskogo otdeleniya Detskoy gorodskoy klinicheskoy bol'nitsy No.1 (glavnyy vrach - zasluzhennyi vrach RSFSR Ye.B. Prokhorovich).  
(PANCREAS--DISEASES) (ERYTHROBLASTOSIS FETAL)

ZHUKOVA YE. V.

ZISLIN, D.M., dotsent; VOL'F, N.I., kandidat meditsinskikh nauk;  
BUNIMOVICH, G.I., nauchnyy sotrudnik; GOL'DEL'MAN, A.G., nauch-  
nyy sotrudnik; ZHUKOVA, Ye.V., nauchnyy sotrudnik; SEMENOVA, V.A.,  
nauchnyy sotrudnik.

Functional pathology of respiratory organs, blood circulation and  
blood in silicosis. Bor'ba s sil. 1:213-221 '53. (MEHA 7:10)

1. Sverdlovskiy institut gigiyeny truda i profzabolevaniy (for Bu-  
nimovich, Gol'del'man, Zhukova and Semanova)  
(LUNGS--DUST DISEASES) (RESPIRATORY ORGANS--DISEASES) (BLOOD-  
CIRCULATION, DISORDERS OF)

ZHUKOVA, Z.A.; KEL'TSEV, N.V.; OGLOBLINA, I.P.; TOROCHESHNIKOV, N.S.

Using new sorbents in the advanced-stage dehydration of gases.  
Khim.prom. no.2:100-105 F '62.

(MIRA 15:2)

(Gases--Drying)  
(Adsorbents)

"APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0

AYZENSHTAT, Ya.S.; ZHUKOVA, Z.A.

Some problems of segregation in hybrid plants. Vest. LGU 14  
no.21:28-41 '59. (MIRA 12:10)  
(Hybridization, Vegetable)

APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0"

ZHUKOVA, Z.A.; KEL'TSEV, N.V.

Adsorption of methane, carbon monoxide, nitrogen, hydrogen,  
and their mixtures on activated carbon. Trudy VNIIGAZ no.6:  
154-168 (MIRA 12:10)  
(Gases) (Adsorption) (Carbon, Activated)

16312  
S/081/62/000/005/059/112  
B156/B108

5.2430

AUTHORS:

Kel'tsev, N. V., Zhukova, Z. A.

TITLE:

Investigation of the purification of hydrogen in a moving layer of activated coal

PERIODICAL:

Referativnyy zhurnal. Khimiya, no. 5, 1962, 407, abstract 5K99 (Tr. Vses. n.-i. in-t prirodn. gazov, no. 12, 1961, 143 - 149)

TEXT: The process of adsorptioinal removal of impurities of  $\text{CH}_4$ , CO, and  $\text{N}_2$  from  $\text{H}_2$  has been investigated; the initial gas passes up a vertical column in the opposite direction to a continuous layer of AF-2(AG-2) and SKT(SKT) activated coal. The height of the adsorption section was 70 cm. The coal was regenerated in the lower part of the column by heating in an electric tube furnace, with purified  $\text{H}_2$  simultaneously blown through it. Experiments were made with  $\text{H}_2\text{-CH}_4$  mixtures (up to 20%  $\text{CH}_4$ ), and also with ternary (82%  $\text{H}_2$ , 15% CO, and 3%  $\text{CH}_4$ ) and quaternary (52.5%  $\text{H}_2$ , 36.1%  $\text{N}_2$ , Card 1/2

Investigation of the purification...

S/081/62/000/005/059/112  
B156/B108

8.7% CO, and 2.7% CH<sub>4</sub>) mixtures. It was found possible to obtain hydrogen of a purity of >99.9%. The best adsorbent is the highly active SKT coal, the specific surface area of which is ~1500 m<sup>2</sup>/g. The ideal conditions for the purification process are: pressure 25 atm, temperature during desorption 200°C, during adsorption the lowest possible, gas flow rate in the adsorption section 1 nl/cm<sup>2</sup>, amount of pure H<sub>2</sub> used for blowing out impurities in the desorption section up to 10% of the total amount of purified gas produced. [Abstracter's note: Complete translation.]

Card 2/2

AYZENSHTAT, Ya.S.; ZHUKOVA, Z.A.

Problem of the nature of relations within individual families  
in plant hybrids. Bot. zhur. 47 no. 8 (1126-1140 Ag '62).

(MIRA 15:10)

(Hybridization, Vegetable)

ZHUKOVA, Z. A.

SOV/6246

PHASE I BOOK EXPLOITATION

Soveshchaniye po tseolitam. 1st, Leningrad, 1961.

Sinteticheskiye tseolity; polucheniye, issledovaniye i primeneniye  
(Synthetic Zeolites: Production, Investigation, and Use). Mod-  
cow, Izd-vo AN SSSR, 1962. 286 p. (Series: Its: Doklady)  
Errata slip inserted. 2500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh  
nauk. Komisiya po tseolitam.

Resp. Eds.: M. M. Dubinin, Academician and V. V. Serpinskiy, Doctor  
of Chemical Sciences; Ed.: Ye. G. Zhukovskaya; Tech. Ed.: S. P.  
Golub'.

PURPOSE: This book is intended for scientists and engineers engaged  
in the production of synthetic zeolites (molecular sieves), and  
for chemists in general.

Card ~~102~~ 1/3

Synthetic Zeolites: (Cont.)

SOV/6246

**COVERAGE:** The book is a collection of reports presented at the First Conference on Zeolites, held in Leningrad 16 through 19 March 1961 at the Leningrad Technological Institute imeni Lensoveta, and is purportedly the first monograph on this subject. The reports are grouped into 3 subject areas: 1) theoretical problems of adsorption on various types of zeolites and methods for their investigation, 2) the production of zeolites, and 3) application of zeolites. No personalities are mentioned. References follow individual articles.

TABLE OF CONTENTS:

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Dubinin, M. M. Introduction	5

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Synthetic Zeolites: (Cont.)

SOV/6246

THEORETICAL PROBLEMS OF ADSORPTION ON ZEOLITES.  
METHODS OF INVESTIGATION

Dubinin, M. M., Z. A. Zhukova, and N. V. Kel'tsev. Applicability of the Potential Theory to the Adsorption of Gases and Vapors by Synthetic Zeolites

7

Bering, B. P., V. V. Serpinskiy. Adsorption Isosteres for Synthetic Zeolites Within the Framework of the Potential Theory

18

Timofeyev, D. P., O. N. Kabanova, I. T. Yerashko, and A. S. Ponomarev. The Role of the Secondary Porosity of Zeolites in the Kinetics of Water-Vapor Sorption

24

Misin, M. S., B. V. Adrianova, and M. N. Adrianov. Investigation of the Adsorption and Kinetic Properties of Granular Zeolites With the Aid of Thoron

31

Card ~~27~~ 3/3

8/064/62/000/002/004/006  
B101/B144

AUTHORS: Zhukova, Z. A., Kel'tsev, N. V., Ogloblina, I. P.,  
Torocheshnikov, N. S.

TITLE: Use of new absorbents for intensive gas drying

PERIODICAL: Khimicheskaya promyshlennost', no. 2, 1962, 24-29

TEXT: Experiments with granulated 4A (4A) and 5A (5A) zeolites for air- and gas drying were conducted. At 20°C and 10 mm Hg, the absorptive power of these zeolite types amounted to 20.8 and 20.6 g/100 g respectively. Investigation of the adsorption isotherms of water vapor at 0-350°C showed: (1) Superiority of the zeolites compared with silica gel and aluminum oxide, (a) owing to greater moisture capacity; (b) owing to lower temperature dependence. Gases may therefore be dried by zeolites without cooling the adsorber. Experiments with an adsorber tube of 1.3 mm diameter, granulation of the zeolites 1-2 mm, depth of layer 62 cm, were conducted with air of known dew point. Results: (1) A dew point of -60 to -65°C was reached for a rate of gas flow of 1.15 l/cm<sup>2</sup>.min and 0.4 l/cm<sup>2</sup>.min in the adsorption layer. (2) Temperature increase from 30 to 80°C reduces /

Card 1/2

Use of new absorbents for ...

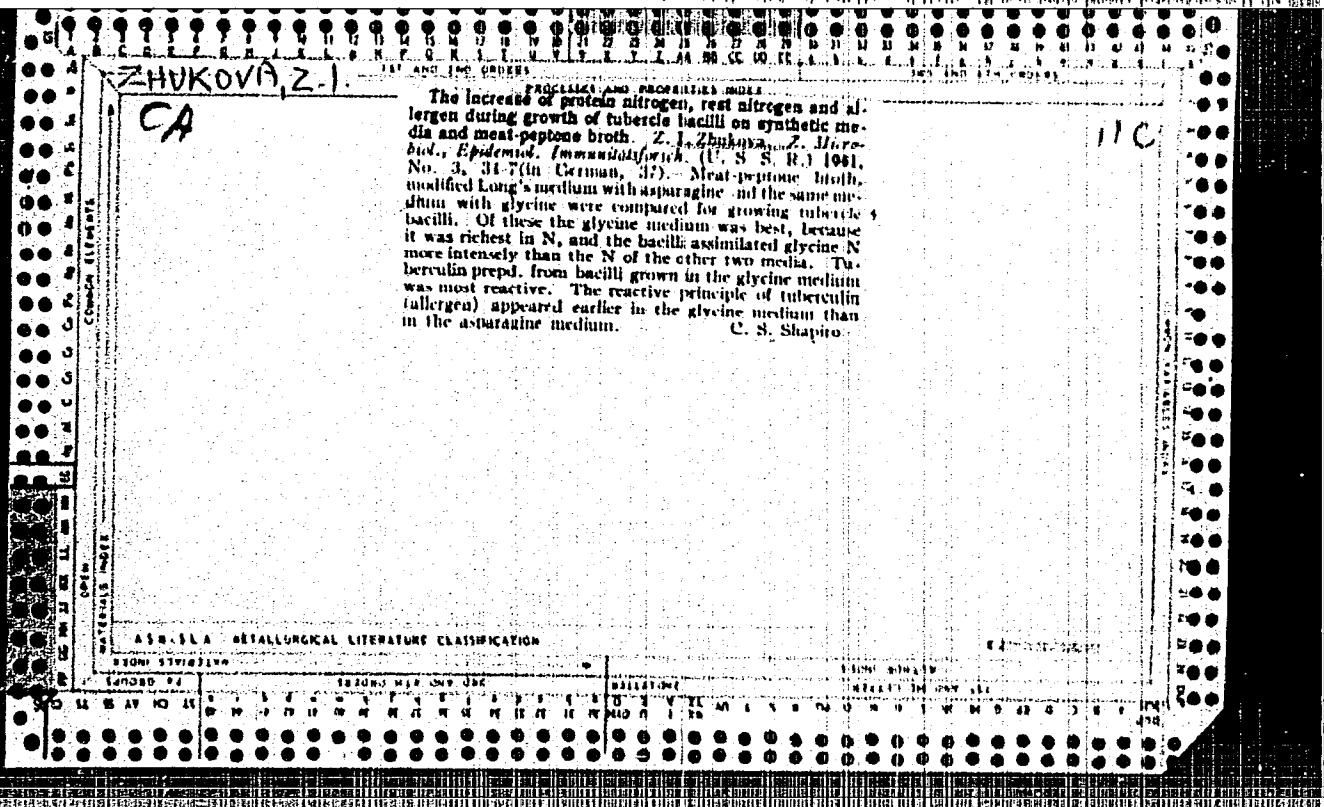
S/064/62/000/002/004/008

B101/B144

the dynamic activity of the zeolites from 21 g/100 g to 16 g/100 g. A rate of 3 l/cm<sup>2</sup>.min is assumed to be permissible for industrial adsorbers. Experiments with natural gas from the Stavropol' deposit were also conducted at 50°C and 0.5 l/min. A dew point of -60°C was reached. Because of the selective H<sub>2</sub>O vapor adsorption by zeolites the other gas components did not affect the adsorption. Even the heavy hydrocarbons do not penetrate the fine structure of the 4A zeolite pores, so that no coke formation sets in during regeneration. 200-350°C is the best regeneration temperature. For regeneration with cold gas, heating in direct flow is preferred: dew point for direct flow down to -80°C, for counter flow only -60 to -65°C. A mixture of 74.2% N<sub>2</sub>, 5.7% CO, 6.5% H<sub>2</sub>, 6.0% H<sub>2</sub>O, and 7.6% CO<sub>2</sub> was also simultaneously dried and purified. H<sub>2</sub>O was adsorbed most of all in the first zeolite layer and gradually displaced the CO<sub>2</sub> adsorbed in the following layers, which left the adsorber at a dew point below -45°C. At 12.8 g/cm<sup>3</sup> moisture, the dynamic activity of the zeolite amounted to 10 g/100 g related to CO<sub>2</sub>, and 11.3 g/100 g related to moisture. There are 8 figures, 2 tables, and 9 references: 7 Soviet and 2 non-Soviet. The reference to the English-language publication reads as follows: A. L. Kohl, F. C. Riesenfeld, Gas Purification, N. Y., 1960. Card 2/2

PIROGOV, A.A.; LEVE, Ye.N.; BELICHENKO, G.I.; ZHUKOVA, Z.D.; Prinimala uchastiye  
VOSKRESENSKAYA, S.K.

Investigating the resistance of certain unfired magnesia refractories  
to the attack of copper-nickel mattes. TSvet. met. 36 no.11:27-32 N  
'63. (MIRA 17:1)



KEL'TSEV, N.V.; ZHUKOVA, Z.A.

Studying the process of hydrogen purification in a fluidized bed of activated carbon. Trudy VNIIGAZ no.12:143-149 '61. (MIRA 15:1)  
(Hydrogen) (Carbon, Activated)

ZHUKOVA, Z.D.; PITAK, N.V.; ENTIN, V.G.

Phase changes in the lining of reactors for the production of carbon black. Ogneupory 30 no.9:26-32 '65. (MIRA 18:9)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (for Zhukova, Pitak). 2. Nauchno-issledovatel'skiy konstruktorsko-tehnologicheskiy institut shchinoj promyshlennosti (for Entin).

ZHUKOVA, Z. I.

Vaccine and Serum Inst., MKZdrava, Leningrad, (-1944-)

"Biological Properties of Albuminous Fractions of the Purified Tuberculin,"

Zhur. Mikrobiol., Epidemiol., i Immunobiol., No. 10-11, 1944.

RUBINSHTEYN, B.B.; BELOUSOVA, V.K.; ZHUKOVA, Z.N.; KOLODOVSKIY, V.L.;  
PROKHOROVA, O.M.; SAYKOVSKAYA, V.A.

Smallpox vaccination in the White Russian S.S.R. Zdrav. Bel.  
7 no. 2:38-40 F '61. (MIRA 14:2)

1. Iz Belorusskogo instituta epidemiologii, mikrobiologii i  
gigiyeny (direktor V.I. Votyakov).  
(WHITE RUSSIA—SMALLPOX—PREVENTION)

PAVLYUKOV, A.A.; red.; KOZIN, V.M., red.; RYMAR, G.V., red.; ZHUKOVA,  
Z.P. otv. za vypusk; ZAYATS, Y.M., red.; KUZHNEGOVA, V.Ya.,  
tekhn.red.

[Synthetic resins and molded materials; a concise manual] Sinte-  
ticheskie smoly i pressovochnye materialy; kratkii spravochnik.  
Pod obshchei red. A.A.Pavliukova, V.M.Kozina, G.V.Rymar. Lugansk,  
1959. 76 p. (MIRA 14:2)

1. Russia (1917- R.S.F.S.R.) Luganskiy ekonomicheskiy admi-  
nistrativnyy rayon. Byuro tekhnicheskoy informatsii.  
(Resins, Synthetic)

ZHUKOVETS, A.M.

Effect of the wind on diffracted waves on the water. Okeanologija  
3 no.6:970-978 '63. (MIRA 17:4)

"APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0

ZHUKOVETS, A.M.

Effect of roughness of the bottom on waves in shallow waters. Izv.  
AN SSSR. Ser. geofiz. no.10:1561-1570 O '63. (MIRA 16:12)

APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0"

"APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0

ZHUKOVETS, A.M.

Determination of energy losses of swells caused by the action  
of turbulent and kinematic viscosity. Okeanologiya 3 no.2:225-  
234 '63. (MIRA 16:4)

(Waves)

APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0"

ZHUKOVETS, A. V., kand. med. nauk; CHERNYY, V. N.

Rare case of a uterine tumor of the lymphangiocystic fibroma type. Akush. i gin. 38 no.3:131-132 My-Je '62. (MIRA 15:6)

1. Iz kafedry patologicheskoy anatomii (zav. kafedroy - prof. V. G. Chudakov) i kafedry akusherstva i ginekologii (i. o. zav. - dotsent N. V. Kobozeva) Leningradskogo pediatricheskogo meditsinskogo instituta (dir. - dotsent Ye. P. Semenova)

(UTERUS—TUMORS) (CYSTS)

ZHUKOVETS, A.M. (Leningrad)

Accuracy of results obtained in solving practical problems using  
the theory of small wave amplitudes. FMTF no.2:83-87 Ja-F '65.  
(MIR 18;8)

KHISTOFOROV, V.S.; BIBANOV, V.I.; ZHUKOVETS, A.M.; SANEL'NIKOV, V.S.;  
ZHILIN, N.V.; MARCHENKO, L.L.

Effects of the earthquake of May 4, 1959 in the region of  
Petropavlovsk. Biul. Sov. po seism. no. 11:45-63 '60 (MIRA 14:3)  
(Petropavlovsk region—Earthquakes and building)

ZHUKOVETS, A.V. (Leningrad)

Hemopoiesis in the liver in hemolytic disease in newborn infants.  
(MIRA 15:1)  
Arkh.pat. no.1:24-31 '62.

1. Iz kafedry patologicheskoy anatomii (zav. - prof. V.G. Chulekov)  
Leningradskogo pediatricheskogo meditsinskogo instituta (rektor  
Ye.P. Semenova).  
(LIVER) (HEMOPOIETIC SYSTEM) (ANEMIA)

ZHUKOVETS, A.V. (Leningrad)

Pneumatosis intestinalis in children. Arkh.pat. 21 no.2:66-70 '59.  
(MIRA 12:12)

1. Iz kafedry patologicheskoy anatomii (zav. - prof. D.D. Lokhov  
[deceased] Leningradskogo gosudarstvennogo pediatricheskogo medi-  
tsinskogo instituta (dir. -prof. N.T. Shutova).

(INTESTINES, cysts,  
pneumatosis cystoides intestinalis in child. (Russ))

ALITOVSKAYA, T.N., kand. med. nauk; ZHUKOVETS, A.V., kand. med. nauk

Two cases of Addison's disease in childhood. Pediatriia 36 no.11:  
53-56 N '58. (NLR 12:8)

1. Iz kafedry patologicheskoy anatomii (zav. - prof. D.D. Lekhov)  
Leningradskogo pediatriceskogo meditsinskogo instituta (dir. -  
prof. N.T. Shutova).  
(ADDISON'S DISEASE)

ZHUKOVETS, A.V. (Leningrad, 194, ul. Chaykovskogo, d.61, kv. 12)

Dynamics of the process of falling-off of the umbilical cord stump  
and healing of the umbilical wound. Arkh. anat. gist. i embr. 36  
no.3:36-41 Mr '59.. (MIRA, 12:7)

1. Kafedra patologicheskoy anatomii (sav. - prof. D.D. Lokhov)  
[deceased] Leningradskogo pediatricheskogo meditsinskogo instituta.  
(UMBILICAL CORD, physiol.  
dynamics of falling-off of stump & healing of umbilical  
wound (Rus))

ZHUKOVETS A.V.

EXCERPTA MEDICA Sec 5 Vol 12/9 General Path. Sept 59

2679. INTESTINAL PNEUMATOSIS IN CHILDREN (Russian text) - Zhukovetz  
A.V. - ARKH. PATOL. 1859, 21/2 (66-70) Illus. 3

Intestinal pneumatosis is relatively rare in man, whereas it is more frequently observed in animals, especially in swine. Twelve observations on infants from 1-10 months of age are reported. On the basis of the clinical aspects a toxic dyspepsia or sepsis, lasting from one to four months, had been suspected. Contrary to what is observed in adults, mainly the colon was involved and a giant cell reaction around the gas bubbles was lacking. The latter were found in fissures of the tissue of the submucosa, very rarely also in lymphatic vessels and lymph nodes. Generally, inflammatory phenomena were also observed in the intestinal wall; therefore infection seems to be the aetiological factor, though this has not been proved.

Brandt - Berlin (V. 7\*)

ZHUKOVETS, I.

Problem method in the technology of metals classes. Prof.-tekhn.  
obr. 22 no.7:18-21 J1 '65. (MIRA 18:8)

1. Professional'no-tekhnicheskoye uchilishche No.23 Moskvy.

ZHUKOVETS, I., prepodavatel'

Variability of methodological means. Prof.-tekhn. obr. 20 no.7:  
19-20 Jl '63. (MIRA 16:10)

1. Professional'no-tekhnicheskoye uchilishche No.23, Moskva.

"APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0

ZHUKOVETS, I.P.

Machine for marking-off sheets. Biul. TSIICHEM no.9, 51-52 160.  
(MIRA 15:4)

(Sheet metal working machinery--Patent)

APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0"

ZHUKOVETS, Valentina Iosifovna; SAAK'YAN, Yu.A., red.

[ "Builder" is an honorable title] Stroitel' - pochastnoe  
zvanie. Rostov-na-Donu, Rostovskoe knizhnoe izd-vo, 1962.  
18 p. (MIRA 18:5)

KUDRYAVTSEVA, K.P.; ZHUKOVETS, M.S.; ARUTYUNOV, I.S.; NOGAYEV, B.N.;  
SPITSYN, V.V.; RYAKIN, M.M.; NEKLINEVA, G.G.; IKAYEV, H.V.;  
AVRAMENKO, L.M.; TSOGOYEV, T.Kh., et al., red.; BATMATOV, P.S.,  
tekhn.red.

[Economy of the North Ossetian A.S.S.R.; statistics] Narodnoe  
khoziaistvo Severo-Osetinskoi ASSR; statisticheskii sbornik.  
Ordzhonikidze, 1958. 130 p. (MIRA 12:10)

1. North Ossetian A.S.S.R. Statisticheskoye upravleniye.
2. Nachal'nik Statisticheskogo upravleniya Severo-Osetinskoy  
ASSR (for TSogoyev).

(Ossetia--Statistics)

AUTHOR: Zhukovetskiy, P.A. SOV/19-58-6-675/685

TITLE: A Filter for Purifying Water (Fil'tr dlya osvetleniya vody)

PERIODICAL: Byulleten' izobreteniy, 1958, Nr 6, p 150 (USSR)

ABSTRACT: Class 85d, l. Nr 113869 (574571 of 10 June 1957). Submitted to the Committee for Inventions and Discoveries at the Ministers Council of USSR. A water filter of sand, gravel, etc., for water wells; to simplify the construction and make the filter replaceable when clogged, the filtering material is put into fabric bags and laid into metal or wooden slatted cases; separate bags filled with filtering material of only one grain size but the cases are filled with bags not necessarily containing material of the same grain size.

Card 1/1

ZHUKOVETS'KIY, P.A.; LEVIN, S.L.; TKACHIV, L.N., inzh., nauchnyy red.;  
ROZENBERG, A.S., red.izd-va; VORONETSKAYA, L.V., tekhn.red.

[Using local materials in constructing houses to be built by  
groups of workers] Primenenie mestnykh materialov pri stroi-  
tel'stve domov kollektivami trudiashchikhsia. Leningrad, Gos.  
izd-vo lit-ry po stroit.arkhit. i stroit.materialam, 1959. 114 p.  
(MIRA 12:10)

(Building materials) (Precast concrete construction)

ZHUKOVETSKIY, Petr Apollinar'yevich; KARPOV, V.V., redaktor; PUL'KINA,  
~~Ye.A.~~, tekhnicheskij redaktor

[Ground water impoundage in districts having new and idle lands  
for cultivation] Vodozabory gruntovykh vod v raionakh osvoenija  
tselinykh i zalezhnykh zemel'. Leningrad, Gos. izd-vo lit-ry po  
stroit. i arkhitekturye, 1955. 108 p.  
(MIRA 8:6)

(Water supply)

ZHUKOVETSKIY, V.V.

Research carried out in 1958 by the Mining and Metallurgical Institute of Northern Caucasus. Izv.vys.ucheb.nay.; tavet.met.  
2 no.4:152-155 '59. (MIRA 13:1)  
(Caucasus, Northern--Metallurgical research)

ZHUKOVETSKIY, V.V.

Preparation of alumina from kyanites. Izv. vys. ucheb. zav.;  
tsvet. met. 4 no.5:110-116 '61. (MIRA 14:10)

1. Severokavkazskiy gornometallurgicheskiy institut, kafedra  
metallurgii legkikh metallov.

(Alumina) (Kyanite)

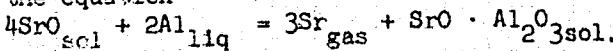
S/149/60/000/006/011/018  
A006/A001

AUTHOR: Zhukovetskiy, V. V.

TITLE: The Role of Strontium Aluminate Formation in Aluminothermal Reduction  
of Strontium Oxide

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Tsvetnaya metallurgiya, 1960,  
No. 6, pp. 119-123

TEXT: During the last years great attention was paid to vacuum thermal methods of obtaining alkali earth metals. Aluminum is an effective reducing agent in vacuum thermal processes. It reduces the oxides of alkali-earth metals and forms corresponding metals and aluminates. G. G. Gvelesiani and V. A. Pazukhin (Ref. 2) show that if strontium metal is prepared by this method at 1,100 - 1,200° C, a monoaluminate of strontium is also being formed under vacuum conditions, according to the equation



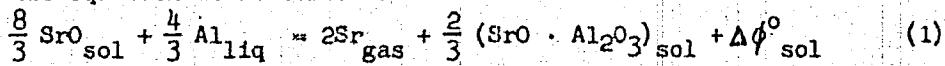
If the coefficients are selected in such a manner that the individual equation of the formation of aluminum oxide and of the metal to be reduced, are related to one

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S/149/60/000/006/011/018  
A006/A001

The Role of Strontium Aluminate Formation in Aluminothermal Reduction of Strontium Oxide

oxygen mole, the equation is as follows:



where  $\Delta\phi^{\circ}_{\text{sol}}$  is the change in the standard free energy of reaction. The equation may be represented as a sum of individual equations with values of free energy  $\Delta\phi_1^{\circ}$ ,  $\Delta\phi_2^{\circ}$ ,  $\Delta\phi_3^{\circ}$ ,  $\Delta\phi_4^{\circ}$ . Equations showing values of  $\Delta\phi_1^{\circ}$ ,  $\Delta\phi_2^{\circ}$  and  $\Delta\phi_3^{\circ}$  as functions of temperature have been calculated by a number of authors. However, the results obtained were rather inaccurate since the thermodynamical functions for strontium aluminate were assumed as approximative. Experimental data on the determination of equilibrium constants of the reduction reaction (Ref. 3) are used to make more precise its value, the function of  $\Delta\phi_3^{\circ} = f^{\text{III}}(T)$  or  $\Delta\phi_4^{\circ} = f^{\text{IV}}(T)$  and consequently, the position of the reaction equilibrium (1). The function  $\Delta\phi^{\circ}_{\text{sol}} = f(T)$  is calculated on the basis of data given below.

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The Role of Strontium Aluminate Formation in Aluminothermal Reduction of Strontium Oxide

Initial data used to determine the function  $\Delta\phi_{solid}^{\circ} = f(T)$

State of the substance	Heat capacity, cal/g-mole	Entropy, cal/g-mole	Changes in heat content, cal/mole
Sr <sub>gas</sub>	4.97	39.325 [4]	- 39200
Al <sub>liq</sub>	7.0 [5]	8.98	2348
O <sub>2</sub> gas	7.16 + 1.0 · 10 <sup>-3</sup> T - 0.4 · 10 <sup>5</sup> T <sup>-1</sup> [5]	49.003 [4]	-
SrO <sub>sol</sub>	12.34 + 1.12 · 10 <sup>-3</sup> T - 1.80 · 10 <sup>5</sup> T <sup>-2</sup> [5]	13.0 [4]	141100 [4]
Al <sub>2</sub> O <sub>3sol</sub>	27.38 + 3.08 · 10 <sup>-3</sup> T - 8.20 · 10 <sup>5</sup> T <sup>-2</sup> [5]	12.186 [4]	399040 [6]
SrO · Al <sub>2</sub> O <sub>3gas</sub>	31.64 + 10.19 · 10 <sup>-3</sup> T [3]	25.62 [3]	541874 [3]

The heat content and entropy of liquid aluminum at a standard temperature were calculated on the basis of the melting heat of aluminum equal to 2500 cal/mole

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The Role of Strontium Aluminate Formation in Aluminothermal Reduction of Strontium Oxide

(Ref. 5) at 659°C, the heat capacity of solid aluminum  $C_p = 7.0$  cal/g-mole (Ref. 5) and entropy of solid aluminum  $S_{298} = 6.77$  cal/g-mole (Ref. 5). Thermodynamical values for strontium aluminate were obtained on the basis of experimentally determined pressure of strontium vapors during the reaction of its reduction. The calculation was made according to the equation  $\Delta\Phi^{\circ}_{sol} = \Delta H^{\circ}_{sol} - T\Delta S^{\circ}_{sol}$ . It was found that the conversion of aluminum oxide into strontium aluminate had only a slight effect on the reduction temperature due to the fact that the formation of the aluminate from the corresponding oxides caused a relatively small change in the free energy of the process. As a result the lines of free energy of the formation of pure aluminum oxide and strontium aluminate are very closely located on the graph. A reduction of residual pressure in the system affects much more the decrease of the operational temperature of the process. Strontium is a very active metal and may, at a temperature of reduction, vigorously interact with oxygen and nitrogen. Therefore when the process is conducted without inert gases a higher vacuum not only promotes a decrease in the temperature of the process but assures the production of purer and more compact metal.

Card 4/6

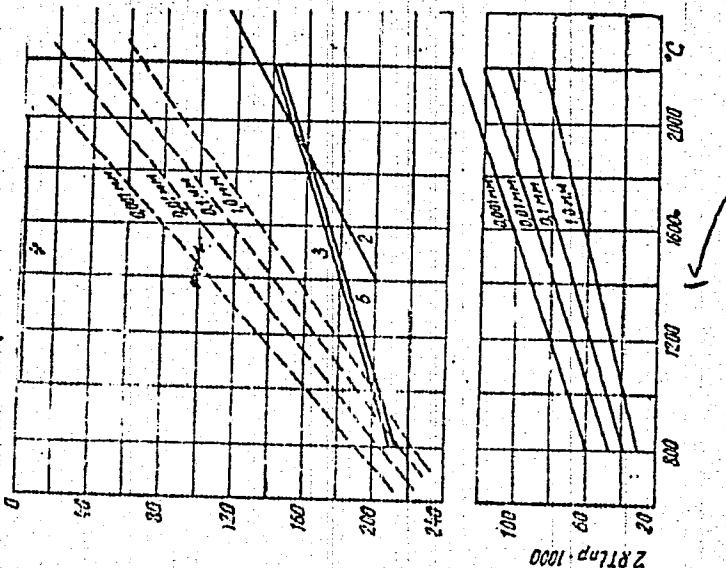
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A006/A001

The Role of Strontium Aluminate Formation in Aluminothermal Reduction of Strontium Oxide

Figure: The effect of temperature on changes of  $\Delta H^\circ$  and  $2RT\ln p$  in  $\text{SrO}$ . The figures on the curves correspond to the numbers of reactions. (In  $2RT \ln p$ ,  $p$  is the initial partial pressure of vapors of the gaseous factor of the reaction, which in the given case is strontium). T

There are 1 table, 1 figure and 7 references, 4 Soviet and 3 English.

ASSOCIATION: Severstal'kuznetskiy gornometalurgicheskiy zavod (North Chelyabinsk Institute of Mining and Metallurgy)



S/149/60/000/C06/011/018  
A006/A001

The Role of Strontium Aluminate Formation in Aluminothermal Reduction of Strontium Oxide

ASSOCIATION: Kafedra metallurgii legkikh metallov (Department of Metallurgy of Light Metals)

SUBMITTED: April 15, 1960

Card 6/6

ZHUKOVETSKIY, V.V.

Role of the formation of strontium aluminate in the aluminothermic reduction of strontium oxide. Izv. vys. ucheb. zav.; tezvet. met. 3 no. 6:119-123 '60. (MIRA 14;1)

1. Severokavkasskiy gornometallurgicheskiy institut. Kafedra metallurgii legkikh metallov.  
(Strontium--Metallurgy) (Aluminothermy)

ZHUKOVETSKIY, V. V.

ZHUKOVETSKIY, V. V.: "Investigation of some problems of the alumino-thermal process of obtaining calcium, strontium, and barium." Min. Higher Education USSR. Moscow Inst. of Nonferrous Metallurgy and Gold imeni M. I. Kalinin. Moscow, 1956  
(Dissertation for the degree of Doctor in Technical Sciences)

SO: Knizhnsya Letopis', No 36, 1956, Moscow/

SOV/137-59-1-119

Translation from: Referativnyy zhurnal Metallurgiya, 1959, Nr 1, p 18 (USSR)

AUTHOR: Zhukovetskiy, V. V.

TITLE: Thermodynamics of the Aluminum-reduction Process in Production of Calcium, Strontium and Barium (Termodinamika alyuminotermicheskikh protsessov polucheniya kal'tsiya, strontsiya i bariya)

PERIODICAL: Tr. Sev.-Kavkazsk. gorno-metallurg. in-ta, 1957, Nr 15, pp 210-231

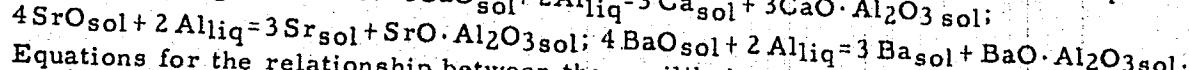
ABSTRACT: In order to explain the mechanism of the interaction between CaO and Al and to determine with greater accuracy the composition of the aluminates (A) formed, an investigation was made of the deoxidation of Ca from mixtures calculated to form the following complexes:  $3\text{CaO}\cdot\text{Al}_2\text{O}_3$ ,  $5\text{CaO}\cdot3\text{Al}_2\text{O}_3$ ,  $\text{CaO}\cdot\text{Al}_2\text{O}_3$ , and  $3\text{CaO}\cdot5\text{Al}_2\text{O}_3$ . The reduction was achieved in a vacuum at  $1100 - 1300^\circ\text{C}$  in 4 hours. The raw materials were briquetted. It was established that during the first period the Ca is deoxidized and  $3\text{CaO}\cdot\text{Al}_2\text{O}_3$  is formed. The Al in excess of that calculated by the equation  $6\text{CaO} + 2\text{Al} = 3\text{CaO}\cdot\text{Al}_2\text{O}_3 + 3\text{Ca}$  enters into reaction with the tricalcium A. As a result of this the yield of Ca can exceed 50%. The vapor pressures of Ca, Sr, and Ba

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SOV/137-59-1-119

**Thermodynamics of the Aluminum-reduction Process in Production of Calcium (cont.)**

during the aluminothermic reduction from their respective oxides were determined experimentally and the values were calculated for the free energies and entropies in the following reactions:  $6\text{CaO}_{\text{sol}} + 2\text{Al}_{\text{liq}} = 3\text{Ca}_{\text{sol}} + 3\text{CaO}\cdot\text{Al}_2\text{O}_3_{\text{sol}}$ ;



Equations for the relationship between the equilibrium and free-energy constants and the temperature were developed. Values were found for the free energies, heat contents, and entropies of  $3\text{CaO}\cdot\text{Al}_2\text{O}_3$ ,  $\text{SrO}\cdot\text{Al}_2\text{O}_3$ , and  $\text{BaO}\cdot\text{Al}_2\text{O}_3$ . The relationships between specific heat and temperature for A of Sr and Ba were calculated.

N. P.

Card 2/2

ZHEREBIN, B.N.; DEMBOVETSKIY, V.P.; MINKIN, V.M.; NIKULINSKIY, I.D.;  
Prinimali uchastiye: OBRASHOV, V.M., inzh.; RAYEV, Yu.O., inzh.;  
ZHIGULEV, P.T., inzh.; SUCHKOV, I.A., inzh.; HEREZKIN, B.S.,  
inzh.; NEKRASOV, V.M., inzh.; ZHUKOVICH, A.I., inzh.

Use of coke-oven gas in blast furnaces. Stal' 21 no.8:673-679  
Ag '61. (MIRA 14:9)

1. Kuznetskiy metallurgicheskiy kombinat i Sibirskiy me-  
tallurgicheskiy institut.  
(Blast furnaces—Equipment and supplies)

ZHUKOVICH, A. V.

Zhukovich, A. V. "On the problem of the pathogenesis of Meniere's syndrome", Sbornik trudov Leningr. nauch.-issled. in-ta po boleznyam ucha, nosa, gorla i rechi, Vol. 1X, 1948, p. 158-67.

SO: U # 3042, 11 March 53, (Letopis "Zhurnal "nykh Statey, No. 7, 1949)

ZHUKOVICH, A.V.

Improvement of diagnosis of cerebral abscesses with electroencephalography.  
Vest. otorinolar., Moskva 14 no. 3:25-27 May-June 1952. (CIML 22:4)

1. Senior Scientific Associate. 2. Of Leningrad Scientific-Research  
Institute for Diseases of the Ear, Throat, Nose, and Speech (Director --  
Prof. I. A. Lopotko; Scientific Supervisor -- Prof. V. I. Voyachek,  
Active Member AMS USSR).

ZHUKOVICH, A.V., starshiy nauchnyy sotrudnik

Experimental data on the problem of the role of the higher  
segments of the central nervous system in vestibular function.  
Vest.oto-rin. 16 no.2:40-47 Mr-Ap '54. (MLRA 7:6)

1. Iz Leningradskogo nauchno-issledovatel'skogo instituta po  
boleznyam ukh, gorla, nosa i rechi (nauchnyy rukovoditel'  
chlen Akademii meditsinskikh nauk V.I.Voyachek, dir. prof.  
I.A.Lopatko)

(VESTIBULAR APPARATUS, physiology,

\*relation to cerebral cortex & subcortical centers in rabbit)

(CEREBRAL CORTEX, physiology,

\*relation of vestibular funct. in rabbits)

(BRAIN, physiology,

\*relation of subcortical centers to vestibular funct.  
in rabbits)

ZHUKOVICH, A. V.

ZHUKOVICH, A. V.: "The Role of the Higher Portions of the Central Nervous System in the Vestibular Function (clinical-physiological investigations)." Acad Med Sci USSR. Joint Council of the Group of Leningrad Institutes. Leningrad, 1956. (Dissertation for the Degree of Doctor in Medical Science)

So: Knizhnaya Letopis', No. 18, 1956.

ZHUKOVICH, A.V.

AGEYEEVA-MAYKOVA, O.G., professor (Moskva); ZHUKOVICH, A.V. (Leningrad)

Diagnostic significance of labyrinthine reactions [with summary in English]. Vest, oto-rin. 19 no.1:38-44 Ja-F '57 (MIRA 10:4)  
(LABYRINTH, physiol.

diag. significance of labyrinthine reactions) (Rus)

ZHUKOVICH, A.V.; SHOKINA, A.V.

Encephalographic examinations in logoneurosis. Zhur. nevr. i  
psikh. 64 no. 12:1785-1791 '64. (MIRA 18:1)

1. Elektrofiziologicheskaya laboratoriya (zaveduyushchiy N.P.  
Bekhtereva) Leningradskogo neyrokhirurgicheskogo instituta im.  
Polenova.

ZHUKOVICH, A.V., doktor med.nauk (Leningrad)

Development of the teaching of Meniere's disease; on the 100th  
anniversary of the death of Prosper Meniere. Vest.otorin. no.4:  
87-91 '62. (MIRA 16:3)  
(MENIERE'S DISEASE)

ZHUKOVICH, A.V., doktor meditsinskikh nauk (Leningrad)

Dysphagia and paresthesia of the pharynx. Zhur.ush., nos.1 gorl.  
bol. 22 no.2:37-40 Mr-Ap '62. (MIRA 15:11)  
(PHARYNX--DISEASES)

YEGOROV, B. G.; FILIPPOV, M. M.; BLAGOVESHCHENSKAYA, N. S.; ZHUKOVICH, A. V.

In memory of Professor Ol'ga Grigor'evna Ageeva-Maiкова. Vest.  
otorin. no.1:122-123 '62. (MIRA 15:7)

(AGEEVA-MAIKOVA, OL'GA GRIGOR'EVNA, 1887-1961)

ZHUKOVICH, A.V., doktor med.nauk (Leningrad)

Otoneurological symptoms in hypertension. Klin.med. no.9:94-99  
'62. (MIRA 15:12)  
(HYPERTENSION) (NERVOUS SYSTEM-DISEASES)  
(EAR-DISEASES)

ZHUKOVICH, A. V., doktor med. nauk (Leningrad)

Rhinogenic intracranial complications. Vest. otorin. no.2:18-21  
'62. (MIRA 15:2)

(BRAIN--DISEASES) (SINUSITIS)

LYSENKO, I.Z.; ZHUKOVICH, I.Ya.; HYUVRIN, A.I.

Ways of improving the chamber-and-pillar system of mining.  
Trudy Inst. gora dela AN Kazakh. SSR 19:3-8 '65.

(MIRA 18:12)

ZHUKOVITSKIY, I.M.

Case of diaphragmatocele. Vrach delo no. 5:135-136 My '61.  
(MIRA 14:9)

1. Ob'yedimennaya bol'nitsa st. Belgorod.  
(HERNIA)

ZHUKOVITSKIY, Ivan Mikhaylovich; ORLOVSKIY, L.Y., red.; KALINICHEV,  
V.A., tekhn.red.

[Prevention of pulmonary cancer] Profilaktika raka legkikh.  
Moskva, Gos.izd-vo med.lit-ry Medgiz, 1960. 12 p.

(LUNGS--CANCER)

(MIRA 14:5)

ZHUKOVSKIY, A.V.

USSR/General and Special Zoology. Insects. Injurious Insects and Ticks. Pests of Cereal Crops

Abs Jour : Rof Zhur - Biol., No 11, 1958, No 49563

Author : Zhukovskiy A.V.

Inst :

Title : The Problem of the Diapause of the Hessen Fly Larvae.

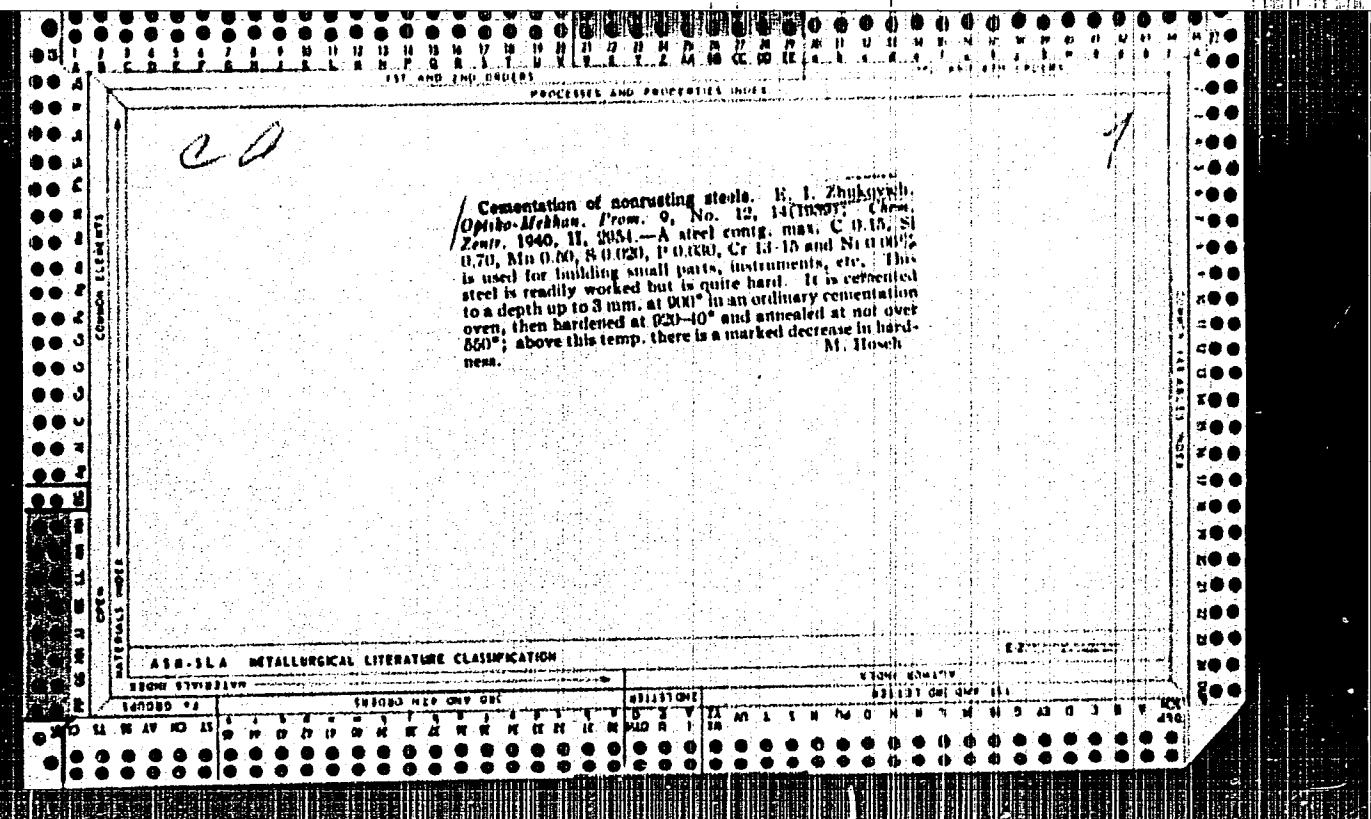
Orig Pub : Entomol. obozreniye, 1957, 36, No 1, 28-43

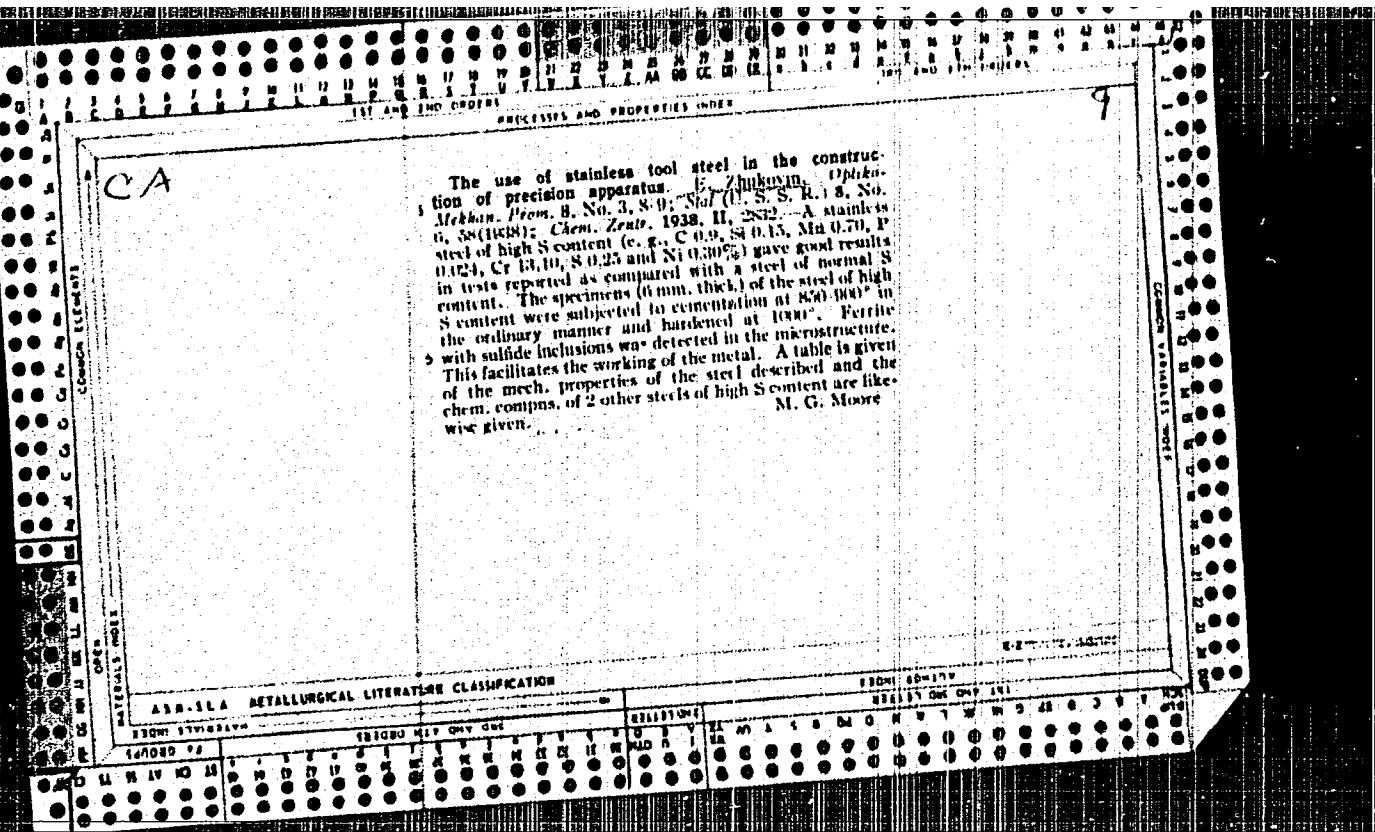
Abstract : Diapause of the larvae is natural to the Hessen Fly. The decisive factor in the appearance of the diapause is increased temperature. Early larvae of spring generation develop without diapause before the coming of warm weather. But larvae of later spring generation, which develop in an increased temperature, undergo diapause before the fall. Larvae of summer generation also undergo diapause in pseudo-cocoons before the fall. Imago emerge from them later than from the pseudo-

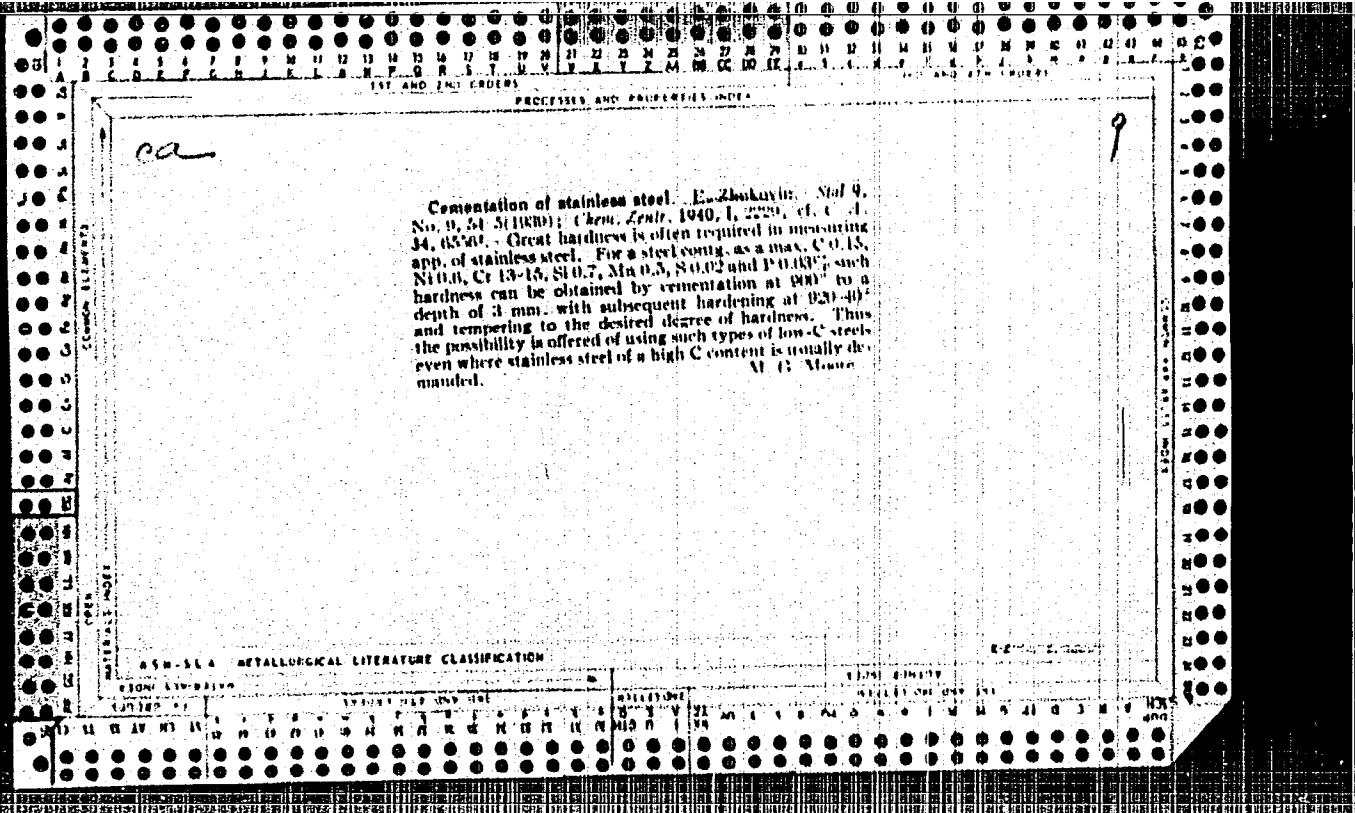
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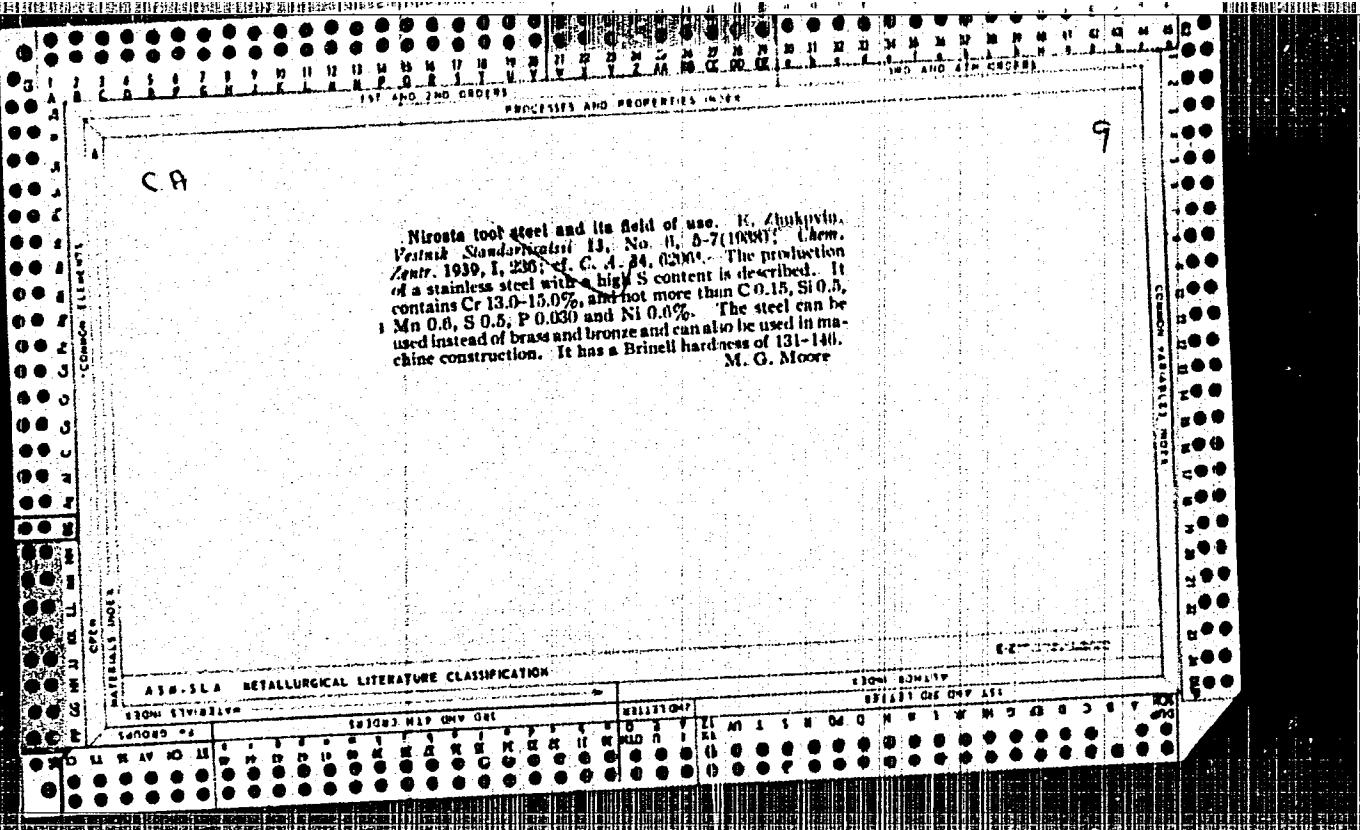
AGYEVA-MAYKOVA, Ol'ga Grigor'yevna; ZHUKOVICH, Anna Vasil'yevna

[Principles of otorhinolaryngoneurology] Osnovy otorinolaringonevrologii. Moskva, Medgiz, 1960. 298 p. (MIRA 13:8)  
(OTOLARYNGOLOGY) (NERVOUS SYSTEM--DISEASES)









*S* 10  
The Carburizing of Stainless Steel. V. Zhukovin. (Sthal, 1930, No. 9, pp. 54-55). (In Russian). Experiments with a stainless steel (13-15% of chromium, 0.6% of nickel, and up to 0.15% of carbon) carburized at 900° C. in a carburizing mixture of the usual composition, showed that after quenching from an optimum temperature of 920-940° C. an average hardness of Rockwell C 55 was obtainable. The carburizing of low-carbon stainless steel renders it suitable for parts of measuring instruments and for dies for moulding synthetic resin without the need for chromium-plating.

## 1 AER-3A METALLURGICAL LITERATURE CLASSIFICATION

VADYDOV, V.V., kand. tekhn. nauk; GRANKIN, I.G., inzh.; NAZAROVA, Z.G., inzh.;  
ZHUKOVIN, D.I., inzh.

Use of an ultrasonic viscosimeter to determine the viscosity of  
tar solutions used to chemically reinforce rocks. Nauch. soob.  
IGD 20:122-126 '63. (MIRA 16:10)

(Viscosimeter) (Tar—Testing)

DAVYDOV, V.V., kand. tekhn. sci.; FRANKIN, I.G., inzh.; ZEUKOVIN,  
D.I., inzh.

Apparatus for determining and automatically recording the  
hardening time of resins. Nauch. soob. IGD 18:192-196 '63.  
(MIRA 16:11)

ZHUKOVIN, Ye. I.

PA 163T61

USSR/Metals - Testing, Springs  
Elasticity

Jun 50

"Elasticity Testing of Spring Materials," Ye. I.  
Zhukovin, Losinostrov Electrotech Plant imeni  
Dzerzhinskii

"Zavod Lab" Vol XVI, No 6, pp 732-733

Suggests evaluating elastic properties of material  
by relation of deflection to concentrated load in  
bending of specimens on two supports separated by  
predetermined space. Describes instrument for  
elasticity testing of thin flat springs, piano  
wire, and contraction and extension of helical  
springs.

FDD

163T61

ZURHOVITSKY A. N.

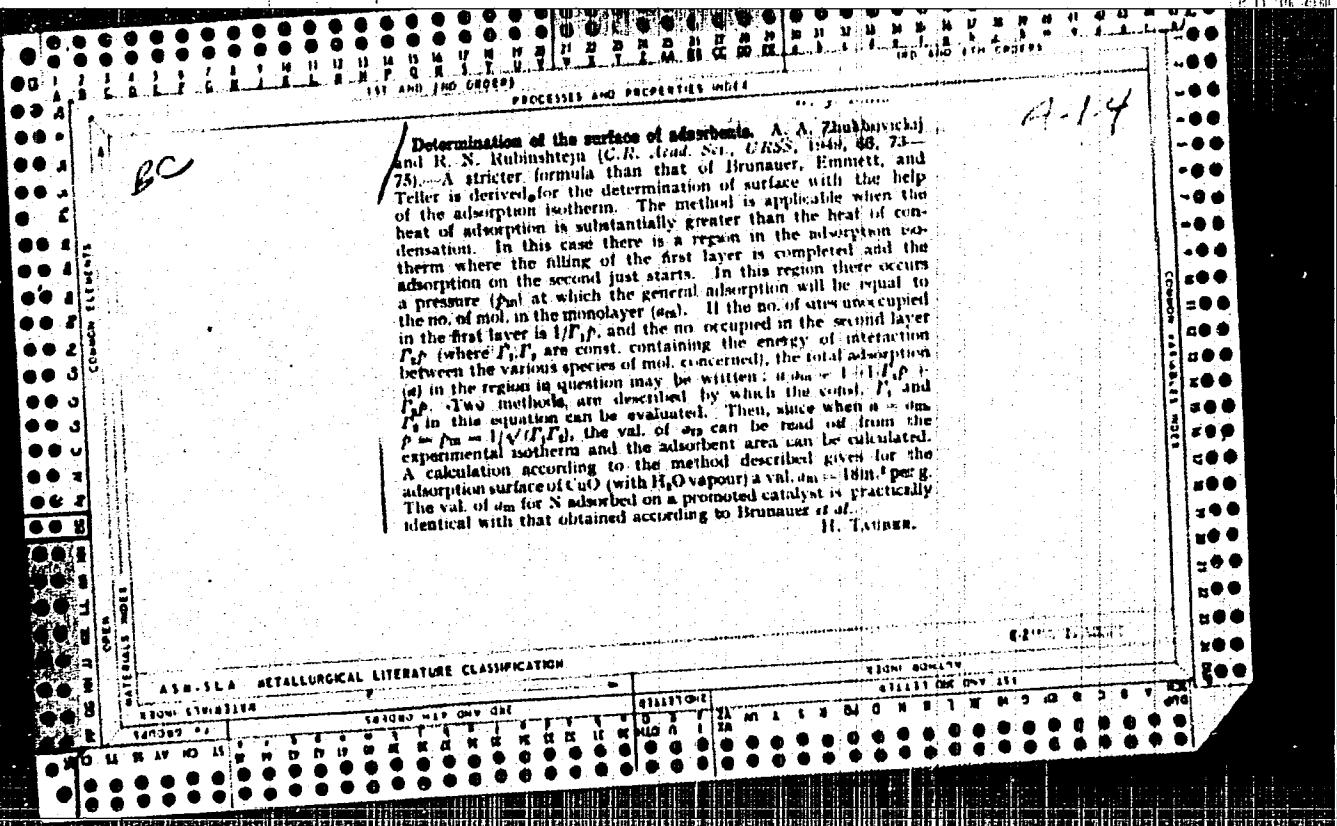
CA

(Extraction of gas from an air current No. 1 by carbon material). I.D. V.N. Kuznetsov, A.A. Shchegolev, and A. N. Zurhovitsky. Zhar. Fiz. Khim. 25, 102-111 (1951); Zh. Tekhn. Kibernetiki, 1953, No. 4, 10-13 pp. The adsorbent was formed at a rate of  $f$  (g/g) and diffused through a layer of activated C (the grains of which had diameter  $d$  between 0.17 and 0.22 mm.) of 1, 2, 3, 6, and 8 cm. length ( $L$ ). The adsorption of  $K_2O$  by C yielded a Langmuir type isotherm. The initial  $v_0$  of  $K_2O$  beyond the adsorbent was measured with an spectrometer. The increase in time agreed with the prediction of the theory. The kinetic coeff.  $\beta$  was approx. proportional to  $a^{1/2}/l$ , similar to heat transfer to a bundle of tubes. The concentration curves behind the adsorbent coincided if  $L\beta/a$  was kept const. The time for the  $K_2O$  concn. behind the adsorbent to reach  $1/2$  the original concn. was proportional to  $f$ .

## ABSTRACTS METALLURGICAL LITERATURE CLASSIFICATION

C-1770802-10007

FROM STATEMENT																TO STATEMENT																																																																																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100



ZHUKOVITSKIY, A. A. (Prof) Dr. Chem. Sci.

"The Application of Tagged Atoms in Metallurgy," Kazakh. Pravda, Alma-Ata,  
19 Oct 55, No.248, p.2, col. 1-2.

Head of the Dept. of Physical Chem., Moscow Steel Inst. im. Stalin

Translation D 396676

"APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0

APPROVED FOR RELEASE: 07/16/2001

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CIA-RDP86-00513R002065010007-0

APPROVED FOR RELEASE: 07/16/2001

CIA-RDP86-00513R002065010007-0"

ZHUKHOVITSKIY, A.A.; TURKEL' TAUB, N.M.

Errors in chromatographic analysis associated with incomplete separation. Zav. lab. 24 no. 7:796-798 '58. (MIRA 11:?)

1. Nauchno-issledovatel'skiy geologo-razvedochnyy neftyanoy institut.  
(Chromatographic analysis)

ZHUKHOVITSKIY, A.A.; GOLITSYN, A.G.

New method for measuring the thermodynamic characteristics of solid solutions. Zav. lab. 24 no. 7:828-829 '58. (MIRA 11:7)

1. Moskovskiy institut stali im. Stalina.  
(Solutions, Solid)

247700(1137,1138,1144)

27680  
S/076/61/035/009/003/015  
B101/B110

AUTHORS: Belashchenko, D. K., and Zhukhovitskiy, A. A.

TITLE: Theory of electric transport

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 9, 1961, 1921 - 1926

TEXT: The authors theoretically studied the electric transport in a metallic two-component system. (I) They proceed from Onsager's method and write:  $J_1 = L_{11}X_1 + L_{12}X_2 + L_{13}X_3$ ;  $J_2 = L_{21}X_1 + L_{22}X_2 + L_{23}X_3$ ;  $J_3 = L_{31}X_1 + L_{32}X_2 + L_{33}X_3$  (1), where X are defined by:

$$\begin{aligned} X_1 &= -\frac{d\mu_1}{dx} - e_1 \frac{d\varphi}{dx}, \\ X_2 &= -\frac{d\mu_2}{dx} - e_2 \frac{d\varphi}{dx}, \\ X_3 &= -\frac{d\mu_3}{dx} - e_3 \frac{d\varphi}{dx}. \end{aligned} \quad (2).$$

J<sub>1</sub> is the current of ions of the first type, J<sub>2</sub> of the second type, J<sub>3</sub>  
Card 1/7

27680  
S/076/61/035/009/003/015  
B101/B110

### Theory of electric transport

is the current of electrons,  $e_1, e_2, e_3$  are the corresponding charges,  $\varphi$  is the electric potential, and  $\mu_1, \mu_2, \mu_3$  are the chemical potentials.  $\mu_3 = e_3 \xi$ . Constant temperature is assumed. For the electric neutrality, it is written down:  $e_1 J_1 + e_2 J_2 + e_3 J_3 = I$  (3), where  $I$  is the external current. Substitution of Eq. (1) and (2) in (3) gives:

$$-l_1 \frac{d\mu_1}{d\varphi} - l_2 \frac{d\mu_2}{d\varphi} - (e_1 l_1 + e_2 l_2 + e_3 l_3) \frac{d\varphi}{dx} - e_3 l_3 \frac{d\xi}{dx} = I, \quad (4)$$

where  $l_1 = e_1 L_{11} + e_2 L_{21} + e_3 L_{31}$ ;  $l_2 = e_1 L_{12} + e_2 L_{22} + e_3 L_{32}$ ;  $l_3 = e_1 L_{13} + e_2 L_{23} + e_3 L_{33}$  (5). For the electric conductance  $\kappa$ , it is written down:  $e_1 l_1 + e_2 l_2 + e_3 l_3 = \kappa$ ; the ionic mobility  $\mu_i = l_i / c_i$ , where  $c$  is the concentration of the respective ion in  $\text{cm}^{-3}$ . The moving force for the transport of components is, at first, not assumed to be the gradient of the chemical potential of atoms; there are two other causes: the gradient of the chemical potential of ions, and the gradient of the

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electric potential. The case  $J_1 + J_2 = 0$  is studied. For the chemical potentials  $\mu_1^*$  and  $\mu_2^*$  of atoms, it is written down:

$$\begin{aligned}\mu_1^* &= \mu_1 + z_1 \mu_3 = \mu_1 - \frac{c_1}{c_3} \mu_3 = \mu_1 - e_1 \xi, \\ \mu_2^* &= \mu_2 + z_2 \mu_3 = \mu_2 - \frac{c_2}{c_3} \mu_3 = \mu_2 - e_2 \xi.\end{aligned}\quad (7),$$

where  $z_1$  and  $z_2$  are the ionic charges. Substitution of Eq. (7) in the Gibbs-Duhem equation  $c_1 d\mu_1^*/dx + c_2 d\mu_2^*/dx = 0$  gives:

$c_1 \frac{d\mu_1}{dx} + c_2 \frac{d\mu_2}{dx} = \frac{d\xi}{dx} (c_1 e_1 + c_2 e_2)$  (8). From these ansatzes, the authors derive the fundamental equation for the electric transport:  $\frac{I_1}{\chi} I - J_1 = L_{11} \left(1 + \frac{1}{c_2}\right) \frac{d\mu_1^*}{dx}$  (15), and considering that  $I_1 = c_1 u_1$ ;  $I/\chi = E$ .

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$$(E = \text{field intensity}) \text{ they obtain: } c_1 u_1 E - J_1 = L_{11} \left(1 + \frac{c_1}{c_2}\right) \frac{d\mu_1^*}{dx} \quad (15a).$$

$$\text{For } E = 0, D = L_{11} \left(1 + c_1/c_2\right) d\mu_1^*/dc_1 \quad (16) \text{ and } J_1 = c_1 u_1 E - D dc_1/dx \quad (16a).$$

With  $J_1 = J_2 = 0$ ,  $c_1 u_1 E = L_{11} \left(1 + c_1/c_2\right) d\mu_1^*/dx \quad (17)$ . If there were no interaction between the motion of ions and electrons, the following would hold:  $L_{13} \ll L_{11}$ , and  $L_{11} = u_1 c_1 / (e_1 + e_2) \quad (18)$ . With interaction between ions and electrons, however, the behavior of the components is no longer determined by their charge alone. The "effective charge"  $e_1^*$

is defined by:

$$u_1^* = \frac{D}{kT} e_1^* \frac{d \ln c_1}{d \ln a_1}. \quad (19)$$

Substitution of Eq. (19) in (16a) gives:

$$J_1 = \frac{e_1 D}{kT} e_1^* \frac{d \ln c_1}{d \ln a_1} E - D \frac{dc_1}{dx}. \quad (20)$$

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and for  $J_1 = 0$ :  $d\ln a_1/dx = e_1^* E/kT$  (21). From Eq. (19), (16), (15), and  $l_1 + l_2 = 0$ , it follows:  $L_{13} = -L_{23} = L_{11}/e_3 [ (e_1^* - e_2^*) - (e_1 - e_2) ]$  (22). Further,  $c_1 e_1^* + c_2 e_2^* = 0$  (23). If there is a concentration gradient and diffusion, an additional diffusion emf is formed at the ends of the specimens. For  $I = 0$ ,

$$\frac{d\varphi}{dx} = - \frac{dE}{dx} - e_1 \frac{D}{k} \frac{dc_1}{dx} \left( 1 + \frac{c_1}{c_2} \right). \quad (27)$$

(II) The steady distribution of concentrations in the electric field is calculated by the Thomson-Eastman method. Two adjacent cross sections with the concentrations  $c$  and  $c + dc$  are studied. An ion with the charge  $e_1$  is to be transported in the direction of the electric field  $E$ , an ion with the charge  $e_2$  in the opposite direction. Then,

$$\sum_j \frac{d\mu_i}{dc_j} dc_j - T dS_n = 0. \quad (28)$$

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where  $dS_{\text{tr}}$  is the "transport entropy". Further,

$$\frac{d\mu_1}{dc_1} dc_1 - \frac{d\mu_2}{dc_2} dc_2 - T dS_{\text{tr}} = 0. \quad (29)$$

The authors pass over to the potentials of atoms, and obtain:

$$\left[ \left( 1 + \frac{c_1}{c_2} \right) \frac{d\mu_1}{dx} + (e_1 - e_2) \frac{d\xi}{dc_1} \right] dc_1 = T dS_{\text{tr}}. \quad (1)$$

The "transport heat"  $T dS_{\text{tr}}$  consists of two components: (a) Due to a change of the chemical potential of electrons along the specimen, the following work is done:  $(e_1 - e_2) d\xi$ ; (b) the ionic transport and the electron current perform the work  $(e_1^* - e_2^*) E dx$ . Hence,

$$\left[ \left( 1 + \frac{c_1}{c_2} \right) \frac{d\mu_1}{dx} + (e_1 - e_2) \frac{d\xi}{dc_1} \right] dc_1 = (e_1 - e_2) d\xi + (e_1^* - e_2^*) E dx. \quad (30)$$

and

$$E = \frac{1 + \frac{c_1}{c_2} \frac{d\mu_1}{dx}}{e_1^* - e_2^*}. \quad (31)$$

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Substitution of Eq. (23) in Eq. (31) gives Eq. (21) derived according to Onsager. Conclusion: The effect of the electric transport acting in the direction of the electric field and in opposite direction does not only depend on the charges of the ionic components but also on their interaction with the current of conduction electrons. Papers by S. I. Drakin (Zh. fiz. khimii, 27, 129, 1955) and B. Baranovski (Roczn. Chem., 29, 129, 1955) are mentioned. There are 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: May 25, 1959

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ZHUKHOVITSKIY, Aleksandr Abramovich; TURKEL' TAUB, Nusin Motalevich;  
YENISHERLOVA, O.M., ved. red.; VORONOVA, V.V., tekhn. red.

[Gas chromatography] Gazovaia khromatografija. Moskva, Gostop-  
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(Gas chromatography)

S/204/62/002/006/001/012  
E075/E192

AUTHORS: Zhukhovitskiy, A.A., and Turkel'taub, N.M.

TITLE: New variants of gas chromatography for the automatic control of petrochemical processes

PERIODICAL: Neftekhimiya, v.2, no.6, 1962, 818-824

TEXT: Step-elution and vacancy gas-chromatographic procedures were examined to find a suitable method for the automatic control of petrochemical processes. The advantages of the step-elution variant are that the components of the mixture do not have to be separated completely; relatively long time retention of steps facilitates the transmission of signal and its interpretation. The condition for the preservation of a component-step was given by the authors previously (Dokl. AN SSSR, v.144, 1962, 829), viz:

$$v_o > 3.2 \Gamma \sqrt{HL} \quad (1)$$

while the condition for the separation of two steps is given by:

$$v_o < L\Delta\Gamma - 0.74\Gamma \sqrt{HL} \quad (2)$$

where: H - height of theoretical plate; L - column length;

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New variants of gas chromatography.. S/204/62/002/006/001/012  
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$\Gamma$  - Henry coefficient;  $v_0$  - sample volume. The conditions were confirmed experimentally by the separations of butane and isobutane on Inza brick coated with 2% hexadecane. The advantages of the step-elution method for the purpose of automatic control were illustrated by determining satisfactorily ethylene impurities (0.3%) in town gas. A sufficiently wide ethylene step was obtained to give a satisfactory signal. Return to the base line between the ethylene and propane steps permits its control. The main disadvantage of the step elution chromatography lies in the discontinuous nature of the analytical process necessitating a complex sample injector and the application of a carrier gas. In vacancy chromatography a sample of a mixture is injected into the mixture stream, one of the components of the mixture having been previously removed. The advantages of this method are as follows:  
1) the mixture is passed continuously through the column;  
2) sample injection is simplified; 3) carrier gas does not have to be used; 4) the total concentration of the mixture's components is measured continuously; 5) the determined concentration is not instantaneous but averaged over a certain time.

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New variants of gas ...

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A further development of vacancy chromatography should aim at the elimination of the sample injection and thus make the process fully continuous.

There are 4 figures.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut  
yadernoy geofiziki i geokhimii  
(All-Union Scientific Research Institute of Nuclear  
Geophysics and Geochemistry)

SUBMITTED: May 18, 1962

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